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PRIVACY IN EARLY MODERN SAXONY

PERSPECTIVES ON ARCHITECTURE, CULTURE, HEALTH, LAW, AND RELIGION

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Privacy, Extraction, and Extreme Environments: The Miner, the Hermit, and the First Architect

The development of early modern Saxony into a territory of profound political and cultural influence was, in large part, financed by the mining industry. After a slump in the fourteenth century, mining revived in the mid-fifteenth century with increased demand and improved technologies. The ore-rich mountains in particular – partially Saxon, partially Bohemian – became a major site of extraction. The Saxon town of Annaberg, for example, came into being, with early mining pits starting in 1492. By 1514, it had over 900 working pits to extract silver, copper, tin, bismuth, and cobalt. Its population grew explosively and, by 1540, its then-12,000 inhabitants constituted Saxony's second largest town.[1] The advanced, sixteenth-century technologies of the mining industry were described and documented by the Saxon physician and mining expert, Georgius Agricola (1494–1555) in his influential treatise *De Re Metallica* (1556) on metallurgy and mining.

To enrich my explorative analysis of the experience of privacy in Dresden's early modern mining practices, this chapter draws on the trope of a solitary male figure in the wilderness who extracts raw matter in various forms. To better understand the miner and his work environment as described and depicted by Agricola and other visual representations of the mining process of the time, I will draw conceptual analogies between the labour-related practices of the miner and those of three other male figures whose exposure to an extreme environment came with a unique experience of privacy. The process of extraction created embodied knowledge and changed both the extracting force and the environment. The first section centres on Agricola's descriptions of the miners' work environment. This is followed by an examination of privacy in relation to the miner and his late-medieval and early modern, mythical antithesis popular in mining lore – the solitary Wild Man.

1 Tina Asmussen and Pamela O. Long, "Introduction: The Cultural and Material Worlds of Mining in Early Modern Europe," *Renaissance Studies* 34, no. 1 (2019): 15; Thomas Morel, "The Mines and the Court," in *Underground Mathematics: Craft Culture and Knowledge Production in Early Modern Europe* (Cambridge: Cambridge University Press, 2022), 83–117, https://doi.org/10.1017/9781009267274.004.

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Both inhabit remote landscapes which are turned into wastelands as a result of the mining activities that require the felling of entire forests, turning the mountains inside out and redirecting streams.[2] This man-made wasteland and the extreme underground realm of the mine relates in environmental experience to the figurative desert – the desolate, remote terrain of the desert father (and, to a lesser extent, the desert mother). I will expand my analysis of this historical material with a more associative investigation of desert fathers who were an important trope in the early modern period, long after the actual practice of seeking out the desert to be closer to God had all but ceased. As a conceptual role model, the desert father could be emulated to carve out moments of withdrawal from one's family or community for intense prayer, meditation, work, and study. I will explore this figure in my third section to further describe the nuances of the experience of privacy linked with an extreme environment, such as the mine and the desert. Finally, in the fourth part of this chapter, I will show how the ways in which the miner and the hermit make their respective inhospitable regions survivable evoke the figure of the 'first architect' and his efforts to create shelter, as described in historical treatises of architecture up until and beyond the early modern period. The Wild Man, the desert father, and the first architect will guide my exploration of the miner's experience of privacy below the ground, in an extreme environment of danger, darkness, and isolation. This solitary aspect of the miner's experience has received much less scholarly attention than his integration into a strong collective.[3] This chapter thus draws on a variety of historical material to offer an insight into the sense of privacy anchored in an extreme environment and how related spatial and conceptual constructs and environmental realities provided a unique experience of privacy in the early modern period.

In an architectural-historical context, the simple huts marking shafts in the mining landscape above ground and the lapidary sheds often depicted in hermit paintings evoke the common and pervasive trope of the 'first hut' built by the 'first

2 For more on the Wild Man, see Richard Bernheimer, *Wild Men in the Middle Ages: A Study in Art, Sentiment, Demonology* (Cambridge, MA: Harvard University Press, 1952); Gerhard Heilfurth, *Bergbau und Bergmann in der deutschsprachigen Sagenüberlieferung Mitteleuropas* (Marburg: Elwert, 1967); Roger Bartra, *Wild Men in the Looking Glass: The Mythic Origins of European Otherness*, trans. Carl T. Berrisford (Ann Arbor: University of Michigan Press, 1994); Rudolf Simek, *Monster im Mittelalter: Die phantastische Welt der Wundervölker und Fabelwesen* (Cologne: Böhlau, 2015); Tina Asmussen, "Wild Men in Braunschweig—Economies of Hope and Fear in Early Modern Mining," *Renaissance Studies* 34, no. 1 (2019): 31–56.

3 The emphasis of the collective can be understood as a result of historical reception. See Sebastian Felten, "Mining Culture, Labour, and the State in Early Modern Saxony," *Renaissance Studies* 34, no. 1 (2019): 124.

architect' in architectural writing since antiquity.[4] Descriptions of this primordial hut in early modern architectural theory seem to echo the mining infrastructure detailed in Agricola's treatise – an effort at environmental manipulation to create a stable interior microclimate that contrasts with the harsher and more unstable exterior conditions of wind, cold, heat, rain, direct sunlight, and so on.[5] Despite their tectonic similarities and their shared telos of microclimatic management, mining huts, hermit shelters, and the imagined *ur*-hut of architectural origin stories have never previously been compared. There is a shortage of literature on the architectural implications of early modern mining which tend instead to be allocated to the realm of engineering – an anachronistic classification.[6] Drawing on both the text of Agricola's mining treatise and its detailed woodcuts (292 in total) as well as the Saxon mining scene depicted in the Annaberger Bergaltar (Figure 6), painted by Hans Hesse on the back of the altar of St Anne's Church in Annaberg-Buchholz, Saxony in 1521, this chapter will provide an insight into the architecture of early modern mining. I will pair these sources with seminal architectural treatises by Leon Battista Alberti (1404–1472) and Filarete (c.1400–c.1469) to explore extraction as closely tied to the establishment of rudimentary shelter.[7]

4 For a historical and theoretical overview of this common concept in architectural history, see Joseph Rykwert, *On Adam's House in Paradise: The Idea of the Primitive Hut in Architectural History*, 2nd ed. (Cambridge, MA: MIT Press, 1981). The famous eighteenth-century version of the concept can be found in Marc-Antoine Laugier, *An Essay on Architecture: In Which Its True Principles Are Explained, and Invariable Rules Proposed, for Directing the Judgement and Forming the Taste of the Gentleman and the Architect, with Regard to the Different Kinds of Buildings, the Embellishment of Cities* (London: T. Osborne and Shipton, 1755), https://archive.org/details/essayonarchitect00laugrich/mode/2up?ref=ol, accessed 28 June 2024.

5 A common theme in architectural history and theory, the 'first hut' is often translated as 'primitive hut' in English (juxtaposed against the more neutral German term '*Urhütte*,' for example), which comes with problematic connotations of subjugating the other and colonialism. See, for example, Stephen Cairns, "Notes for an Alternative History of the Primitive Hut," in *Primitive: Original Matters in Architecture*, eds. Jo Odgers, Flora Samuel, and Adam Sharr (London: Routledge, 2006), 86–95. I therefore use the terms 'first hut,' '*ur*-hut,' and 'primordial hut.'

6 Until the eighteenth century, there was little differentiation between architects and engineers. See, for example, Irina Gouzévitch and Peter Jones, "Becoming an Engineer in Eighteenth-Century Europe: The Construction of a Professional Identity," *Engineering Studies* 3, no. 3 (2011): 149–52.

7 Georgius Agricola, *De Re Metallica: Translated from the First Latin Edition of 1556*, trans. Herbert Clark Hoover and Lou Henry Hoover (New York: Dover Publications, 1950), Project Gutenberg e-book, https://www.gutenberg.org/files/38015/38015-h/38015-h.htm, 4, accessed 28 June 2024. Agricola was familiar with and cited Vitruvius, whose *De architectura* (ca. 15 BCE) is the oldest surviving text on architecture. For example, Agricola specifically references Vitruvius' description of a machine that was used to draw water from mines. See Agricola, *De Re Metallica*, 175.

Figure 6: Hans Hesse, Annaberger Bergaltar (1521), St Anne's Church in Annaberg-Buchholz, Saxony, Wikimedia Commons.

As Mette Birkedal Bruun writes, "privacy is contingent," that is, it relates to a specific context and must simultaneously be understood as an evolving concept.[8] My analysis of the miner, the Wild Man, the hermit, and the first architect in their respective *vastitates* (Latin term for 'desert,' but also denoting 'destruction' and 'wasteland'[9]) will shed light on the experience of privacy in relation to extractive practices that treat a hostile environment as a reserve of resources. Much research on early modern privacy revolves spatially around chambers,

8 Mette Birkedal Bruun, "Privacy in Early Modern Christianity and Beyond: Traces and Approaches," *Annali dell'Istituto storico italo-germanico in Trento/Jahrbuch des italienisch-deutschen historischen instituts in Trient* 44, no. 2 (2018): 46.

9 https://www.dizionario-latino.com/dizionario-latino-italiano.php?lemma=VASTITAS100, accessed 28 June 2024.

studies, closets, private chapels, and retreats.[10] The typologies explored in this chapter offer an expansion of these spaces by including the miner's shaft or tunnel, the concept of the imagined 'first shelter' built by the 'first architect,' and the hermit's desert abode (on which many of the spaces associated with early modern privacy are modelled). The chapter situates privacy in spaces of labour, particularly those that either require privacy simply because of the spatial conditions of the work or because the subject of labour is secret or demands full concentration and a minimum of distractions or intrusions caused by the presence of other people. Lena Cowen Orlin observes, "Personal privacy takes many forms: interiority, atomization, spatial control, intimacy, urban anonymity, secrecy, withholding, solitude."[11] Beyond interiority, spatial control, secrecy, and solitude, I will examine instances of an almost compulsory privacy in relation to mining and the consequences and implications of labour in an extreme environment. This environment provided just enough space and resources for one body, and being in private was a prerequisite for completing challenging extractive work, for the attentiveness required to respond to deadly environmental dangers, and for mental discipline, as exemplified in the dealings with demons. In the sections that follow, I frame privacy as a prerequisite for the extractive practices linked to the transformative processes of knowledge creation, with special focus on the spatial conditions.

6.1 The Miner

In sixteenth-century knowledge production, metals were situated at the faultline between the secrecy of alchemy and the openness of "the great age of mining literature."[12] A major contributor to this literature was Agricola. His university edu-

10 Bruun, "Privacy in Early Modern Christianity," 43–6. See also Lena Cowen Orlin, "Closets," in *Locating Privacy in Tudor London* (Oxford: Oxford University Press, 2008), 296–326. Much of the work coming out of PRIVACY aims to expand the view on spaces of privacy. See, for instance, Natacha Klein Käfer, ed., *Privacy at Sea: Practices, Spaces, and Communication in Maritime History* (Cham: Springer International, 2023), https://doi.org/10.1007/978-3-031-35847-0.

11 Orlin, *Locating Privacy*, 2.

12 Pamela O. Long, "The Openness of Knowledge: An Ideal and its Context in 16th-Century Writings on Mining and Metallurgy," *Technology and Culture* 32, no. 2 (April 1991): 328. See also Pamela H. Smith, "The Codification of Vernacular Theories of Metallic Generation in Sixteenth-Century European Mining and Metalworking," in *The Structures of Practical Knowledge*, ed. Matteo Valleriani (Cham: Springer International, 2017), 371–92, https://doi.org/10.1007/978-3-319-45671-3_14.

cation – founded on the humanist familiarity with important classical texts[13] – informed his proximity to practitioners and vice versa. His historical and theoretical knowledge formed the backdrop for his practical observations of mines. Agricola's mining knowledge granted him such liberties as tolerance of his Catholic religion in predominantly Lutheran Saxony and put him at a significant competitive advantage as an investor. In fact, by 1542, nine years after he had moved to Saxony and begun to invest in mines, Agricola was one of Chemnitz's twelve richest inhabitants and in 1546, the Saxon prince Maurice (1521–1553) appointed him burgomaster.[14] In a futile attempt to restrict access to Agricola's extensive mining knowledge, Maurice's brother and successor, Augustus (1526–1586) tried to convince Agricola to translate the *De Re Metallica* into German exclusively for the ruler's use.[15] However, Agricola died later that year before the translation could be made.

Agricola's writing is witness to the conditions of privacy pertaining not just to the process of ore extraction (as I will demonstrate) but also to aspects of metallurgical knowledge creation above ground. For example, in relation to assaying, Agricola specified, "It is necessary that the assayer who is testing ore or metals [. . .] should close the doors of the room in which the assay furnace stands, lest anyone coming at an inopportune moment might disturb his thoughts when they are intent on the work."[16] In a statement probably recalling his own experiences,

13 Well-versed in many disciplines himself, Agricola stressed that the miner (in this case, meaning the owner or co-owner of a mine) should be thoroughly familiar with "many arts and sciences," specifically philosophy, medicine, astronomy, surveying, arithmetical science, drawing, law, and architecture. See Agricola, *De e metallica*, 4.

14 Long, "The Openness of Knowledge," 336.

15 The following letter draft is transcribed, shortened, and cited in Andrea Kramarczyk, "'Ihr wollet dasselbe abschreiben lassen'—Kurfürst August von Sachsen und Georgius Agricolas montanistisches Werk," Agricola-Forschungszentrum Chemnitz, 2: "D Agricola/eodem die [8. 1. 1555]/ Hochgelarter l.g. Nachdem ir/hiebeuor im latein ein Buch im/Druck ausgehen lassen. Des titel/~~ist~~ sein sal De rebus metallicis,/welchs vns fast gerumbt wirt,/vnd wir aber den Verstand desselben/ gerne wissen vnd haben mochten,/Als ist Vnser gnedigs begeren,/Ir wolltet dasselb Buch zu forderlich/ewer gelegenheit in die Deuczsche/sprach vordolmeczschen, Vnd ~~Dasselb~~/nicht mehr dan eins wider abschreiben lassen viel weniger/in Druck geben sondern vorwart/bei euch behalten Vnd Vns das abgeschrieben exemplar/dauon zuschicken ~~Das wollen wir/vns auch in gnaden erkennen.~~/Do ir auch darczu eins schreibers/bedurffen wurdet, wollen/wir Ime darumb pflegen lassen/Daran thut ir Vnser gnedige vnd gefellige/meinung Datum."

16 Agricola, *De Re Metallica*, 223–4. For more on the difficulty of carving out undisturbed and private (in the sense of solitary) research time in the early modern period, see also Ivana Bičak, "Chops and Chamber Pots: Satire of the Experimental Report in Seventeenth-Century England," in *Early Modern Privacy: Sources and Approaches*, eds. Michaël Green, Lars Cyril Nørgaard, and Mette Birkedal Bruun (Leiden & Boston: Brill, 2022), 266–80.

Agricola observed that the focus that was conducive to research was disturbed by the presence of others. In this case, knowledge production required solitude of a kind that was also encouraged for prayer. In 1548, just three years after Agricola's death, his fellow Catholic, Ignatius of Loyola advised on the privacy required for the mental exercise of prayer: the practitioner "will, ordinarily, more benefit himself, the more he separates himself from all friends and acquaintances and from all earthly care, as by changing from the house where he was dwelling, and taking another house or room to live in, in as much privacy as he can."[17] In the process of creating his coveted treatise on mining, Agricola oscillated between his study and the mine – two places of potential solitude that could provide him with a precursor to the Loyolan privacy to reflect and write.

Informed by his background as a physician, Agricola's *De Re Metallica* offers an insight into the extreme environment of the mine and details the efforts made to provide survivable working conditions for the mine workers. Agricola vividly conjured the dangers of the subterranean part of the mine in his overview of the causes that could lead to the abandonment of pits.[18] Besides infringing upon military enterprises and a lack of sufficient metal, he listed the following problems: too much water to be managed cost-effectively in tunnels and shafts, "noxious air" and poison that could not be adequately removed from excavated spaces, "fierce and murderous demons" that could not be exorcised, and loose and collapsing structural elements.[19] Additionally, the miners worked in near-complete darkness. Their candlelit lamps would be dimmed by the poor air quality, which also caused headaches.[20] Part of the extraction process involved the setting of targeted fires (Figure 7) to make the harder veins more manageable, further diminishing the air quality and causing potential structural collapses, such as the risk that "the mountain by its great weight sinks into itself, and then the shaft buildings are swallowed up."[21]

Mining takes place in extreme environments where humans must act collectively to ensure their survival. However, mining is also individualistic and solitary. As the miner descends into the mine, he withdraws more and more from the collectiveness of mining. The miner's lone descent into the subterranean realm of extraction resembles the withdrawal from company that is characteristic of privacy. The descent into the extreme environment of the mine was a journey into the unknow-

17 Christine Göttler, "Realms of Solitude in Late Medieval and Early Modern European Cultures: An Introduction," in *Solitudo: Spaces, Places, and Times of Solitude in Late Medieval and Early Modern Cultures*, eds. Karl A. E. Enenkel and Christine Göttler (Leiden & Boston: Brill, 2018), 12.
18 Agricola, *De Re Metallica*, 217–8.
19 Agricola, *De Re Metallica*, 217–8.
20 Agricola, *De Re Metallica*, 121.
21 Agricola, *De Re Metallica*, 128.

Figure 7: Woodcut depicting targeted fire, Agricola, De Re Metallica, 120, Wikimedia Commons.

able, away from the relatively predictable cooperative operations above ground. The further the miner was from the collective above ground, the more he depended on embodied knowledge and his senses (which were often impaired by the shortage of light and oxygen) to navigate the space, maintain vigilance regarding mortal dangers, and embrace the logic of the mountain in order to identify and extract the ore-rich material. The miner's isolation in the subterranean tunnels and shafts was the precondition for tracing the vein of ore before its subsequent extraction from the mountain and its carriage to the collective at the surface. While not directly present in the historical material, this subterranean deconstruction of the mountain and the subsequent reorganisation of its isolated matter according to its

A—Descending into the shaft by ladders. B—By sitting on a stick. C—By sitting on the dirt. D—Descending by steps cut in the rock.

Figure 8: Woodcut depicting descent into the mine, Agricola, De Re Metallica, 213, Wikimedia Commons.

mineral composition can be understood as a metaphor for the heuristic process of scholarly thinking undertaken by Agricola above ground, alone in his study.[22]

Agricola portrayed the different ways of descending into the mine via a shaft (Figure 8). The caption identifies four different methods: "A–Descending into the shaft by ladders. B–By sitting on a stick. C–By sitting on the dirt. D–Descending by steps cut in the rock."[23] A, B, and C are solitary descents down narrow shafts not much wider than the miner's body whereas D is more spacious, big enough even for a horse, and allows several miners to descend at once.[24] This more spacious access could lead to a lower-lying tunnel, which in turn would feed into a narrower set of shafts to access deeper parts of the mine. The Annaberger Bergaltar (Figure 6) also shows various entry points into the mine. The altar consists of four image panels which give detailed insights into the tasks of miners and the context of their labour – in this case, around a silver mine and its related trades. As the miners enter the subterranean part of the mine, they are mostly depicted as solitary figures. Three miners are painted in the act of disappearing alone into the mine's tunnels, and another miner is going down a shaft ladder, while two solitary workers have just emerged. In the distance, on the right panel, a lone miner is at work on a new tunnel opening. Behind the smelting house on the left panel, a carrier is emerging from a tunnel with an open truck of the kind known as a "dog."[25] These openings that led directly into the mountain were sized to accommodate just one person for the simple practical reason that it took a lot of work to excavate these tunnels, and up to 200 metres below the surface, space was kept to the bare minimum required to fit one miner's body, his tools, and lamps.[26] The solitary miners emerging from and disappearing into the mountain contrast with the men at work above ground. Both in Agricola's woodcuts and in the central panel of the Annaberger Bergaltar, these workers can often be seen working in pairs or groups – for example, to operate the windlasses.

The relationship between the scale of the underground architecture and the size of the miner is especially apparent in depictions of the miner below ground,

22 The term 'heuristic' comes from a Greek verb that denotes 'to find.' See Mary Carruthers, *The Book of Memory: A Study of Memory in Medieval Culture*, 2nd ed. (New York: Cambridge University Press, 2008), 23.

23 Agricola, *De Re Metallica*, 213.

24 See also *Mappa Geographica Circuli Metalliferi Electoratus Saxoniae cum omnibus quae in eo comprehenduntur Praefecturis et Dynastiis quales sunt* (Augsburg: Mattaeus Seutter, 174). The copperplate engraving is on two separate sheets with a watercolour wash.

25 Agricola, *De Re Metallica*, 156.

26 Agricola, *De Re Metallica*, 122. See also Thomas Morel, "Of Scholars and Miners," in *Underground Mathematics: Craft Culture and Knowledge Production in Early Modern Europe* (Cambridge: Cambridge University Press, 2022), 20–49, https://doi.org/10.1017/9781009267274.002.

Figure 9: Silver mining in Kutná Hora, 1490s, Illumination, Wikimedia Commons.

Drey flache schächt / vnder welchen der ein noch nicht zum stollen felt A. Der ander biß zum stollen kompt B. Zum dritten / ist der stoll noch nicht getriben C. Der stollen D.
B
C
D

Figure 10: Woodcut depicting the miner below ground, Agricola, De Re Metallica, 104, Wikimedia Commons.

such as in narrow tunnels or cave-like excavations (Figures 8, 9, and 10). In Agricola's depictions, whenever the focus is on a single worker inside a shaft or tunnel, the rectangular frame and neat hatching of parallel lines in the underground spaces is interrupted by a rugged outline. This rugged outline simulates the uneven surface geometry of the mountain and offers a glimpse of the miner – a digger with his "iron tools"[27] or a carrier with a wheelbarrow – alone at work below ground. Naturally, other carriers would come along to wheel away the hewn rock, and fellow labourers might also pass by. The sense of isolation is also conveyed in the Kutna Hora gradual of a mining scene where the underground world consists of dense rock and caves occupied by single miners, collectively working yet barely connected by narrow tunnels.

The miners descended into the mountain alone. In this obscure, liminal domain between the engineered infrastructure and the organic force of raw 'nature,' the miner's space and imagination could be intruded upon by demons. The existence of demons inside mines was an accepted fact in early modern science, corroborated not least by Agricola's inclusion of them in his *De Animantibus Subterraneis*, an overview of subterranean animals that originally formed part of the *De Re Metallica* but is not included in the English translation of 1912. In the words of the Hoovers, the English translators of the *De Re Metallica* (who later went on to become the President and First Lady of the United States):

> Neither the sea nor the forest so lends itself to the substantiation of the supernatural as does the mine. The dead darkness, in which the miners' lamps serve only to distort every shape, the uncanny noises of restless rocks whose support has been undermined, the approach of danger and death without warning, the sudden vanishing or discovery of good fortune, all yield a thousand corroborations [in the minds of the miners].[28]

In addition to the ubiquitous superstitions of the time, the effect of stagnant air and extended periods of solitude undoubtedly made the miners ever more attuned to potential demons. In my analysis of the historical context, the solitary male figures – enclosed in dark shafts, withdrawing deeper into the mountain, possibly pursued by ill-meaning creatures – evoke the miner's opposite counterpart – the shy Wild Man, who lived in voluntary seclusion amid the forests of mountain regions.

27 See Agricola, *De Re Metallica*, 149.

28 Agricola, *De Re Metallica*, 217, footnote 26.

6.2 The Wild Man

When a new mining area was developed in a remote region, the mining folk would soon encounter or confront the 'Wild Man,' either in person or at least the myths surrounding him.[29] A popular figure in mining lore, the Wild Man became a ubiquitous character in the Harz region – which was partly Saxon and where pits and mining towns were named after him and his figure started appearing on silver coins – in the sixteenth century.[30] One example from 1538 depicts the Wild Man carrying a tree trunk in one hand and an ore sample in the other, reflecting his symbolic representation of natural resources.[31]

The Wild Man knew no architecture and no agriculture, spoke no language, and believed in no God. This naked, hairy creature "shunned human contact, settling, if possible, in the most remote and inaccessible parts of the forest, and making his bed in crevices, caves, or the deep shadow of overhanging branches."[32] He was so "bound up with the forest"[33] that on the rare occasions when miners did catch him, he would soon die in captivity. There were Saxon tales that suggested miners would have to catch and even kill the Wild Man before they could find the ore he protected while alive.[34] This narrative translates into the idea that the miners must kill the Wild Man – that is, raw, pre-cultural 'nature' – in order to initiate the extraction of 'nature's' riches. The creation of mining knowledge was thus entwined with a conscious negation of the untamed and 'natural' in favour of extraction. In the words of historian Tina Asmussen, "The Wild Man indicates an environment that is uncanny, raw, unpredictable, foreign, and uncultured."[35] The established mine and its adjacent trades, by contrast, was a site of advanced artistry, craft, and applied scientific knowledge, and this knowledge was 'mined' – that is, acquired and refined – no less than the ore.

Despite their obvious commonalities (both were drawn to mountains, experienced the solitude of unpopulated areas, and were profoundly connected to ore), the figure of the Wild Man was constructed in binary opposition to the miner: the Wild Man retreated whereas the miner advanced; the Wild Man lived in solitude

29 The Wild Man was a well-known mythical figure from the Middle Ages that had lost some general popularity by the sixteenth century, although it remained important in mountainous regions. See Bernheimer, *Wild Men in the Middle Ages* and Asmussen, "Wild Men in Braunschweig."
30 Asmussen, "Wild Men in Braunschweig," 32.
31 Asmussen, "Wild Men in Braunschweig," 37–8.
32 Bernheimer, *Wild Men in the Middle Ages*, 9.
33 Bernheimer, *Wild Men in the Middle Ages*, 24.
34 Asmussen, "Wild Men in Braunschweig," 31.
35 Asmussen, "Wild Men in Braunschweig," 40.

whereas the miner formed part of a collective; the Wild Man inhabited the forest whereas the miner cut it down; the Wild Man protected and concealed the ore whereas the miner exposed it. With regard to architecture, the Wild Man lived in natural caves and crevices and lifted wood only symbolically in representations on coins while the miner felled trees to build huts and fortify tunnels and dug shafts and drifts, creating artificial caves and crevices. Their core difference can be summed up as follows: the miner extracted whereas the Wild Man did not. The act of extraction was fundamental. It went far beyond reacting to one's environment and survival; it was an explorative effort of knowledge and wealth creation. Extraction was part of an alchemical worldview in which one could take part in the transformative processes of nature.

However, the apparent lack of artistry ascribed to the Wild Man was also a kind of strength and superiority. While the mining site's ingenious infrastructure was sized to fit the miner's body, to keep that body safe and functioning in the extremes of the subterranean world, the solitary Wild Man had an entirely different relationship with the environment, and this explained his lack of a built environment. As Richard Bernheimer observes, "The wild man sits wrapped up, shivering and morose, when the sun is shining, while smilingly exposing his body to the elements when the weather is bad."[36] The lore of the Wild Man seems to imbue him with a kind of freedom, an immunity to the harsh climatic conditions of the mine and the surrounding 'desert.'

Early modern Christian society was aware of the destructive implications of extraction. The Christian denunciation of the immoral aspects of affluence, such as greed, were juxtaposed with the obligation to honour humanity's *dominium terrae* as well as nature's riches *by extracting them*.[37] Scholars such as Agricola believed in this obligation to humanity's progress despite the mining industry's accumulation of wealth and its exploitation and wounding of 'Mother Nature.'[38]

36 Bernheimer, *Wild Men in the Middle Ages*, 24.

37 See Asmussen, "Wild Men in Braunschweig," 43 and Asmussen and Long, "Introduction," 10. Todd A. Borlik shows that environmental issues—such as nature's rights, deforestation, and air quality—shaped much of early modern literature. See Todd A. Borlik, *Ecocriticism and Early Modern English Literature: Green Pastures* (New York & London: Routledge, 2012). Phillip John Usher examines early modern extraction (mining) and raises the issues of budding capitalism and ecology, linking the early modern period with today's notion of the Anthropocene. See Phillip John Usher, "Incipit: From Sub-to Exterranean," in *Exterranean* (New York: Fordham University Press, 2019), 14, https://doi.org/10.1515/9780823284245-002. He also points to other authors who have established similar links.

38 This latter position was held by authors of important sixteenth-century mining treatises—for example, Agricola and Biringuccio. See Long, "The Openness of Knowledge," 322 and Asmussen and Long, "Introduction," 8. See also Paulus Niavis' text on a mythological court setting, where a

The sense of entitlement kept the remorse in check. The Wild Man was part of this 'nature' that humans harmed in the process of extraction.

Above ground, miners formed a strong collective that could take on the Wild Man and tame the mountains in their quest for ore and wealth.[39] Underground and alone in the uncontrollable and unknowable dark, however, man became 'wild.'[40] He was no longer protected by the mining collective and its communal ordering efforts, both in terms of the engineering that made the mine physically safe, but also by means of the lore that structured the world into nature and culture. Isolated and below ground, the miner could be intruded upon by demons in the same way that humans intruded upon the Wild Man. Demons were to men as men were to the Wild Man. Just as humans would invade the Wild Man's seclusion and territory in greater numbers if the area was rich in ore, there would be greater numbers of demons to frighten the miners if the pit was richly productive.[41] When underground, the miner became completely 'bound up with the mountain,' just as the Wild Man was bound up with the forest. His lungs filled with lithic dust, the smuts from fires and rock dust clung to his skin, and his body contorted to adjust to the craggy crevices of the probing drifts that followed the

maltreated and bloody Mother Nature sues the miner. For more, see Asmussen, "Wild Men in Braunschweig," 43.

39 "In his recent survey of mining art, Rainer Slotta locates the origin of mining culture in: 'The unique [working] environment—together with the 'battle against Nature'—[that] led to a specific consciousness and a unique identity, which is mirrored in the artistic expressions of the mining sector: The miner creates a special environment and creates monuments for himself, in which he lives and recognizes himself. By creating these 'values' [. . .] he distinguishes himself from other professional groups.'" See Rainer Slotta, "Der (Silber-)Bergbau als Kunst-Katalysator," in *Der Alteuropäische Bergbau: Von den Anfängen bis zur Mitte des 18. Jahrhunderts*, eds. Christoph Bartels and Rainer Slotta (Münster: Aschendorff, 2012), 591–618. Translated by Felten in "Mining Culture, Labour, and the State," 123.

40 Early modern analogies between light and knowledge and between darkness and lack of knowledge were ubiquitous and can be found in numerous sources as well as, for example, in Agricola, *De Re Metallica*, 18.

41 "Hardanus Hake (d. 1611), a sixteenth-century pastor of Wildemann, reports in his chronicle of Harz mining from around 1580 how a *Deamon Metallicus* that the miners called *Berg Männlein*, and which took the form of a friar, haunted the rich pit *Wilder Mann*. This evil spirit protected the silver ores, frightened the miners, and caused great damage. Paracelsus (around 1493–1541) discussed the interconnection of rich ore-bearing veins and spirits at length. The presence of demons in the mines was also a belief that Agricola noted. In his text *Bermannus sive de re metallica* [Bermannus or a Dialogue on Metallurgy] (1530) the learned miner Bermann explains the ambivalent nature of mining demons [. . .]." See Asmussen, "Wild Men in Braunschweig," 39.

veins of ore; occasionally, he even had to hew away at the recalcitrant mountain while lying down.[42]

The belief in demons and in the Wild Man relates to the association of danger with being alone, and this resonated with the prevailing attitude towards privacy in the early modern period, specifically in the first half of the sixteenth century when the private – disengaged from the collective 'presence society' – still suggested a likelihood of wrongdoing, sin, and (moral) danger.[43] Historian Rudolf Schlögl has explored the 'presence society' as a foundational aspect of the early modern period when physical presence initially structured societal and communicative hierarchies and practices.[44] Only slowly did absent parties become able to exert an influence, thereby enabling modern societal structures. The miners who descended into the solitude of the subterranean part of the mine also faced the dangers associated with privacy – moral and mental dilemmas, physical dangers, and lasting isolation. However, exposure to such perils could also result in financial success and thus the opportunity to restructure one's social standing.

6.3 Desert Fathers

Miners were not alone in seeking out the harshest and most solitary environments. Saints who are remembered for retreating to wastelands to mine – in this case, a more conceptual kind of mining – propagated the trope of desert fathers who withdrew into the solitude of remote landscapes to read, write, meditate, pray, and ultimately generate more knowledge.[45] These hermits had sought out deserts and other

42 Later developments in miners' dress show an attempt to disentangle from the mountain: "In the 1730s, miners disassociated themselves from their dirty work by donning pristine, white clothes on their strolls through town. This marked their leisure time in a widely visible way [. . .]." See Felten, "Mining Culture, Labour, and the State," 133. Usher refers to demons present in early modern mines to postulate "an Earth that is vital, vibrant, and ready to enter the miner as much as the miner enters it." See Usher, "Demonic Mines," in *Exterranean*, 112, https://doi.org/10.1515/9780823284245-007.

43 The German term is '*Anwesenheitsgesellschaft*' and is explored in detail in Rudolf Schlögl, *Anwesende und Abwesende: Grundriss für eine Gesellschaftsgeschichte der Frühen Neuzeit* (Constance: Konstanz University Press, 2014). The importance of physical presence in the spatial and cultural setting of the early modern household has been explored in Joachim Eibach, "Das offene Haus: Kommunikative Praxis im sozialen Nahraum der europäischen Frühen Neuzeit," *Zeitschrift Für Historische Forschung* 38, no. 4 (2011): 621–64.

44 Schlögl, *Anwesende und Abwesende*.

45 See Derwas J. Chitty, *The Desert a City: An Introduction to the Study of Egyptian and Palestinian Monasticism under the Christian Empire* (Oxford: Blackwell, 1966). See also William Harm-

kinds of *vastitates* – uncultivated, uninhabited, desolate, or barren land – where they would subject themselves to a hostile climate, close proximity to demons, and remoteness from the distractions of urban life and fellow humans in order to extract enlightenment, an extraction that became possible thanks to the greater closeness to God.[46]

This well-established trope of the hermit, so pervasive at the time, stands behind Agricola when he advises that the assayer should close his door while working when he himself sits in his study to write the *De Re Metallica*, when he depicts a lone miner descending into a cavelike opening in the mountain, and when he writes about the dangers of demons in the absolute remoteness of a deep mining shaft. The figure of the hermit inspired many people – not only individuals, but also professional groups such as artists, professors, and natural scientists – during the early modern period when it became possible to carve out space and time in solitude, away from the collective of the presence society.[47] They modelled the time they spent thinking, writing, and working in solitude on the trope of the hermit, and they fashioned their work spaces – the scholar's study, the artisan's workshop, the alchemist's laboratory – after the hermit's desert abode.[48] The need for solitude often accompanied work that used and produced "specialised and 'secret' knowledge," such as Agricola's highly sought-after treatise.[49]

By embodying enlightenment, the hermit became a kind of idol who could be visited, written about, and depicted in paintings and drawings. In western Europe from the 1300s onwards, hermits were often portrayed in the more familiar remote mountain or forest landscapes rather than in the eastern desert.[50] Here they

less S. J., "Roman Egypt," in *Desert Christians: An Introduction to the Literature of Early Monasticism*, ed. William Harmless S. J. (New York: Oxford University Press, 2004), https://doi.org/10.1093/0195162234.003.0001.

In this chapter, I refer to desert hermits as a male phenomenon because of the historical context and reception that I am engaging with. However, during the eremitic period (which lasted until the Middle Ages), there were also desert mothers and many medieval female recluses. See, for example, Margot H. King, "Desert Mothers: A Survey of the Feminine Anchoretic Tradition in Western Europe," *Hermitary*, accessed 10 March 2024, https://www.hermitary.com/articles/mothers.html. For early modern representations of female desert saints, see "Hermitary—Gallery—Art—Sadeler: Solitudo Sive Vitae Foeminarum Anachoritarum (Female Hermits in Landscapes)," *Hermitary*, https://www.hermitary.com/gallery/art/sadeler-foeminarum/, accessed 10 March 2024.

46 Göttler, "Realms of Solitude," 6.

47 For the professional groups embracing the hermit as model, see Göttler, "Realms of Solitude," 11. For more on being present and 'together,' see Schlögl, *Anwesende und Abwesende* and Eibach, "Das offene Haus".

48 Göttler, "Realms of Solitude," 3, 5, 11.

49 Göttler, "Realms of Solitude," 11.

50 Göttler, "Realms of Solitude," 8. Göttler is citing Jaques Le Goff, *L'Imaginaire médiéval: Essais* (Paris: Gallimard, 1985), 59–75.

would be visited by demons who tested their piety. The best way to deal with these demons was to accept their presence but not engage with them. Miners similarly sought out the dark, subterranean mine with its wasteland of tree stumps above to extract a lithic kind of knowledge. My analogical reading reveals that like the desert fathers, they read the book of nature and exposed themselves to a harsh and solitary existence where they came face-to-face with demons. Like the hermits, miners visited by demons fared best when they simply allowed the demons to carry on with their pretend mining activities (unless the demons in question were of the evil kind, in which case the only thing to do was to abandon the pit). Agricola described the demons' activities as such:

> They wander down the wells and around mines and although they do nothing, they seem to train themselves in all manner of labor. Now they dig holes, now they pour what is dug out into vessels, and now they maneuver the hauling machine. Although sometimes the demons harass [*lacessunt*] the miners with extracted matter [*glareis*], only rarely however do they hurt [*laedunt*] them. The demon never harms the miners unless provoked by loud laughter or insults.[51]

Encountering demons was part of the experience of extreme environments where reason and the senses were pushed to the limit. Whether pretending to engage in mining activities or tempting humans to sin, demons were as uncontrollable as the extreme environments sought out for extraction and had to be tolerated.

Once the landscape is turned into a mine, it would soon be transformed into a literal wasteland – treeless, barren, pierced and punctured, emptied, and burned from the inside out. Tina Asmussen observes that both the German terms *Bergwerk* [mine] and *Landschaft* [landscape] contain suffixes (*-werk* and *-schaft*) that mean 'making' or 'creating,' thus evoking a "manufactured environment, arduously built out of layers of rock and soil."[52] This terrain, manipulated and occupied by miners, resonates with the kinds of wastelands hermits sought to find closer proximity to God in terms of the difficulty of inhabitation.

51 This is an edited translation of Agricola's *De animantibus subterraneis*, cited from Usher, "Demonic Mines," 102.

52 Tina Asmussen, "Ingenuity, Sweat, and Bloodsour Work in Sixteenth-Century Mining Literature," in *Ingenuity in the Making: Matter and Technique in Early Modern Europe*, eds. Richard J. Oosterhoff, José Ramón Marcaida, and Alexander Marr (Pittsburgh: University of Pittsburgh Press, 2021), 65. She also uses the term 'resource landscape.' See Tina Asmussen, "The Cosmologies of Early Modern Mining Landscapes," in Göttler and Mochizuki, *Landscape and Earth*, 239–66, https://doi.org/10.1017/9789048552153.007.

The desert fathers and mothers of the third and fourth centuries inhabited caves and huts in Syria, Palestine, and Egypt.[53] The latter provided shade and shelter from the elements through woven or wooden roofs.[54] The trope of the hermit and his simple abode found its way into countless drawings and paintings – for example, as a hut integrated into a mountain recess in Joachim Patinir's 1517 painting of St Jerome. A collection of over 200 engravings featuring male and female hermits published by the brothers Johann (1550–1600) and Rafael Sadeler (1560–1628) between 1587 and 1600 shows many different types of hermit dwellings. The depictions in the manner of Maerten de Vos (1532–1603) and Adriaen Collaert (1560–1618) show the hermit by natural stone caves rudimentarily enhanced with rough wooden awnings, recesses below large tree roots, simple wooden sheds, and in hollow tree trunks.[55] In some depictions, there are instances of gardening and more advanced infrastructure, such as water channelled towards the hermit's abode in open wooden pipes.

These simple constructions resembled the rustic, pragmatic structures depicted and described in Agricola's *De Re Metallica* and on the panels of the Annaberger Bergaltar. In Agricola's woodcuts, the many tree stumps bear witness to the mining industry's voracious consumption of wood to build infrastructure – lightweight, tectonic huts above ground and stereotomic structures carved into the mountain and fortified with wood below the ground.[56] At the beginning of Book V, Agricola explains the first steps to be taken after a mineral vein that descends into the ground has been discovered and deemed worth mining:

> Now when a miner discovers a *vena profunda* he begins sinking a shaft and above it sets up a windlass, and builds a shed over the shaft to prevent the rain from falling in, lest the men who turn the windlass be numbed by the cold or troubled by the rain.[57]

The shaft and the windlass produce one another: the windlass is necessary to extract the shaft, and without any material to extract, there would be no infrastruc-

53 See David Leatherbarrow and Richard Wesley, "Pre-Modern Cloisters and Precincts," in *Three Cultural Ecologies*, 1st ed. (Oxford & New York: Routledge, 2018), 106–7, https://doi.org/10.4324/9781315595863-5. See also Columba Stewart Osb, "Anthony The Great," in *The Early Christian World*, 2nd ed. (London: Routledge, 2017), 1010–20, https://doi.org/10.4324/9781315165837-51.

54 Leatherbarrow and Wesley, "Pre-Modern Cloisters and Precincts," 107.

55 A delineation of the evolution of the hermit's hut can be found in Leopoldine Prosperetti, *Landscape and Philosophy in the Art of Jan Brueghel the Elder (1568–1625)* (Farnham: Ashgate, 2009), 169–70.

56 The concepts of the tectonic and the stereotomic were influentially described by the architect and author Gottfried Semper (1803–1879) in *Der Stil in den technischen und tektonischen Künsten oder Praktische Ästhetik* (Frankfurt & Munich, 1860–1863).

57 Agricola, *De Re Metallica*, 102.

ture. The windlass and its operators are usually protected by a hut or at least a roof. Before going into details about the underground world and its structural challenges, Agricola prioritises the description of the shed that is to be built over the shaft. These structures are also particularly present on the central panel of the Annaberger Bergaltar (Figure 7) where fifteen simple huts are placed atop neat mounds of excavated material.

In their specific functionality and locality, the huts – be they the hermit's or the miner's infrastructure – manifested the interplay between the raw wooden material (formerly) available on-site, the human body, and the natural elements.[58] Agricola described the architecture of the mine's environmental manipulation in detail. In Agricola's descriptions, quintessential architectural knowledge regarding materiality, body, climate, and microclimate met the extreme, man-made subterranean environment of the mine. At the mine, cutting-edge infrastructural and metallurgical knowledge faced off against the unknowable and uncontrollable subterranean world of poisonous fumes, cruel temperatures, uncontainable fires, foul air, total darkness, demons, loose rocks, and collapsing ceilings. At work, the miners were constantly paying "the greatest attention"[59] to stagnant air, gushing water, loose rocks, and rotten timbering. As well as increasing the miners' chances of survival, this empirical practice of attentiveness during the extraction process also resulted in the production of knowledge about environmental control. The air and its quality were especially crucial environmental agents. Agricola observed that ventilation requirements changed not just according to the condition of the shafts and tunnels but also with the changing seasons, temperatures, and atmospheric conditions.[60] This knowledge was translated into architectural contraptions such as "powerful blowing machines"[61] installed at the mouths of shafts to enhance natural ventilation, which amplified the airflow by tapping into the observed movement of the air through the mine. Hesse also depicted a tall "ventilating machine" for "receiving and diverting into the shaft the blowing of the wind."[62]

Besides such ventilating machines that channelled the wind into the mines, various hauling machines were devised to draw up the water that gathered in the sumps. As the simplest hauling machine, the windlass was central to mining operations – it was used to lift extracted material and groundwater out of the mine

58 See also Ursula Klein and E. C. Spary, eds., *Materials and Expertise in Early Modern Europe: Between Market and Laboratory* (Chicago: University of Chicago Press, 2010).

59 Agricola, *De Re Metallica*, 121.

60 Agricola, *De Re Metallica*, 121–2.

61 Agricola, *De Re Metallica*, 121.

62 Agricola, *De Re Metallica*, 200.

and often also to help the miners descend the shafts.[63] While most hauling machines were built for one or two bodies, some were operated by vertical or horizontal wheels turned by treading or diverted creeks.[64] These machines could take on very large dimensions. Agricola describes the largest (Figure 11), a machine for drawing water. This machine had an operating water wheel measuring 36 feet (roughly 11 metres) in diameter.[65] It also had a reservoir into which a stream was diverted, an axle and drum, brakes, and a "hanging cage" or operating hut for the machine's driver who supervised four fellow workers.[66] In the process of making the environmental conditions of the mine more endurable, mining thus engendered infrastructural innovations. The relationship between the worker's body and the environmental conditions in and above the mine was key to the design and construction of the extraction machinery, to the outfitting of subterranean tunnels and shafts, and to the design of the huts and shelters above ground. In the process of resource extraction and production of mining knowledge, the mining industry thus created and managed extreme environments that in their strain on the human body evoke those sought by the desert fathers.

6.4 The First Hut

The management of environmental agents and infrastructural interventions fell into the domain of architecture. At the time, engineering and architecture were still part of the same discipline, as set out by Leon Battista Alberti, author of the key architectural treatise *Ten Books on Architecture* (1485). He argued that the architect's skills and knowledge went far beyond providing shelter from the sun, the cold, and bad weather, and he emphasised the architect's role in infrastructural management. In line with Agricola's technical descriptions, Alberti states that the architect devises "the methods of drawing up vast quantities of water from hidden depths" and of "cutting through rock, by tunnelling through mountains [. . . and] restraining the waters."[67] At the mine, architecture was a vital dis-

63 In some explanatory depictions, such as Agricola's Figure 8 and the windlass in the foreground of the Annaberger Bergaltar, the machinery is not covered by a shaft-house or roof in order to display the men and the machine at work.

64 Agricola, *De Re Metallica*, 197.

65 1 foot equals 28.5 cm. See https://en.wikisource.org/wiki/De_re_metallica_(1912)/Book_IV#cite_note-2, accessed 28 June 2024.

66 Agricola, *De Re Metallica*, 197–200.

67 Leon Battista Alberti, *On the Art of Building in Ten Books*, trans. Joseph Rykwert, Neil Leach, and Robert Tavernor (Cambridge, MA & London: MIT Press, 1988), 3.

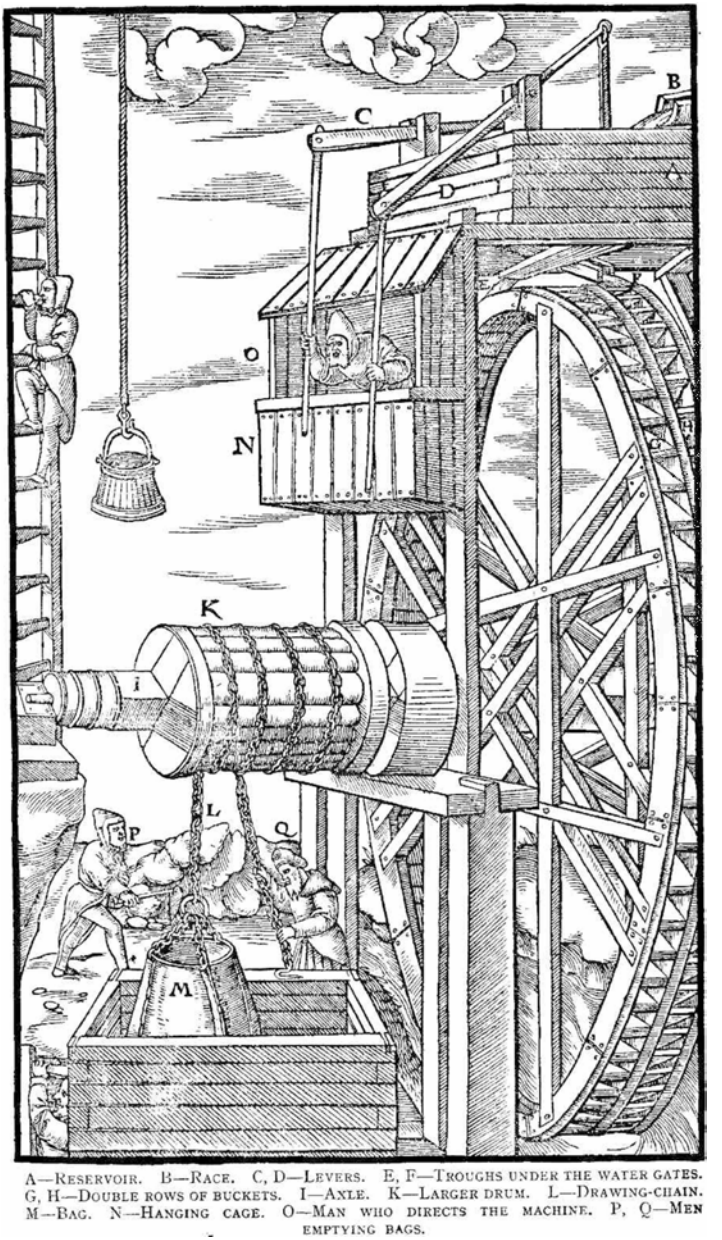

Figure 11: Woodcut depicting machine used for drawing water, Agricola, De Re Metallica, 199, Wikimedia Commons.

cipline that facilitated the excavation of rocks, the piercing of mountains, and access to the 'hidden depths' of the earth.

In his treatise, Agricola points out that buildings such as mining infrastructure and especially windlass huts "protect the [. . .] body from rain, wind, cold, and heat" and are constructed using metallic tools such as "axes, saws, and augers."[68] However, even beyond such direct links to the metallic, architecture in general revolves around the extraction of raw materials – clay for bricks, stone for slabs, tree trunks for wood, sand for glass. Vitruvius details the origins of architecture in Book II of his *Ten Books on Architecture*, the oldest surviving written work on architecture. He stresses the importance of the availability of material. Inhabitants of forested regions build their shelters out of wood whereas others who lack timber might primarily rely on a method of excavation:

> They [. . .] select a natural hillock, run a trench through the middle of it, dig passages, and extend the interior space as widely as the site admits. Over it they build a pyramidal roof of logs fastened together, and this they cover with reeds and brushwood, heaping up very high mounds of earth above their dwellings.[69]

Thus, the process of gathering and extracting construction materials is embedded in the very beginnings of building as a means of creating stable interior conditions. Indeed, according to Vitruvius, the original impetus for building stemmed from a microclimatic event. His narrative evokes the tales of the Wild Man in mining lore: "The men of old were born like the wild beasts, in woods, caves, and groves, and lived on savage fare."[70] During a storm, some trees caught fire, causing people to flee "terrified by the furious flame."[71] When they returned, however, they realised that the fire was pleasantly warm, so they kept it going, and their gathering around this heat source prompted the birth of communication and culture. Soon enough, "they began in that first assembly to construct shelters. Some made them of green boughs, others dug caves on mountain sides, and some, in imitation of the nests of swallows and the way they built, made places of refuge out of mud and twigs."[72] Climatic manipulation and material extraction were as closely bound together in the origin stories of architecture as they were in the mining industry.

68 Agricola, *De Re Metallica*, 14.

69 Vitruvius: The Ten Books on Architecture. Vitruvius. Morris Hicky Morgan. Cambridge: Harvard University Press. London: Humphrey Milford. Oxford University Press. 1914, Chapter 1, https://www.perseus.tufts.edu/hopper/text?doc=Vitr.%202.1&lang=original, accessed 28 June 2024.

70 Vitruvius, Chapter 1.

71 Vitruvius, Chapter 1.

72 Vitruvius, Chapter 1.

The figure of the lone male in a desolate region is ubiquitous and well-known in later architectural origin narratives, as in the *Trattato di Architettura* (1464) by the Italian Antonio di Pietro Averlino, known as Filarete. Filarete is particularly relevant in relation to mining infrastructure which (as I have shown) was built entirely around the miner's body and the conditions encountered in the extreme environment in and around the mine. He references Vitruvius's origin narrative, but he embellishes it with Christian details, postulating that "the first man to build houses and habitations" must have been Adam. After his expulsion from Paradise, Adam was suddenly confronted with the harsh reality of "bad weather and rain."[73] At first, Adam attempted to use his own body for environmental protection: "Since he had nothing else at hand to cover [himself], he put his hands over his head to protect himself from the rain."[74] The accompanying illustration (Figure 12) shows a solitary Adam in naked dejection. Heavy raindrops densely surround him, there are clouds above him, and he stands alone at the very edge of a small, jagged, island-like slab. His defining environmental motivation for building a shelter is to protect his body from the weather.

The relationship between the human body and building is foundational for Filarete, just as it is in mining infrastructure – not just in terms of proportioning and scale, but also in relation to maintenance. Filarete emphasises the analogy between body and building – just like humans who are not well maintained (that is, fed and cared for), neglected buildings also die: "I will [then] show you [that] the building is truly a living man. You will see what it must eat in order to live, exactly as it is with man."[75] Here again, the 'essence' of shelter can be directly linked to mining architecture. If shafts and tunnels are not maintained, they are prone to collapse, crushing the bodies enclosed within. As Filarete writes regarding the maintenance of a building:

> You need to maintain it continually and to guard it from corruption and too much fatigue, because, as man becomes thin and ill from too much fatigue, so [does] the building. Through corruption, the body of the building rots like that of man. Through excess it is ruined and dies like man, just as is said above.[76]

In the mine, this relationship between the rotting structure and the dying miner's body is an urgent reality. By integrating the infrastructure of mining into the discourse of the 'origins of architecture,' we can expand the canon of architectural beginnings beyond housing to encompass extraction. Like an *Urhütte*, the archi-

73 Filarete, MS Magliabechiano, Biblioteca Nazionale Florence, Magl. II, 1, 140, fol. 4v.
74 Filarete, MS Magliabechiano, Biblioteca Nazionale Florence, Magl. II, 1, 140, fol. 4v.
75 Filarete, MS Magliabechiano, Biblioteca Nazionale Florence, Magl. II, 1, 140, fol. 6r.
76 Filarete, MS Magliabechiano, Biblioteca Nazionale Florence, Magl. II, 1, 140, fol. 6r.

Figure 12: Antonio Averlino 'Filarete', Adam, Trattato di architettura (c.1464).

tecture of a mine is formed by the local availability of material (that is, the vein), the climate, and the miner's body.

A running theme throughout the *De Re Metallica* is that Agricola prioritises the well-being of the workers. The extraction methods and infrastructure are closely bound to the needs of the miner's body, which also inform the more complex ventilating machines and windlass designs. This consideration for the miner's body is practical as well as ethical. If the diggers are hindered by a lack of fresh air or by rising water levels underground, or if the windlass operators are overburdened by the weight of their load or by rain and harsh temperatures,

then the extraction process will be jeopardised. Thus, Agricola stresses that "we should always devote more care to maintaining our health, that we may freely perform our bodily functions, than to making profits."[77]

Filarete made architecture about Adam's body. He explained that the first building was constructed "from the necessity for survival"[78] and that its form was "derived from the form and measure of man and from his members."[79] In an adaptation of Filarete, Adam's body might be replaced with the miner's body. The mining architecture then solves the problems of how that body can navigate the extreme, man-made environment of the mine and how the underground space can be extended by further extraction. Thus, like the mining industry, architectural theory and history are constructed in dialogue with a solitary male figure. The first architect was reluctantly marooned in the wilderness, and he built the first hut to protect himself from the elements. The resulting *ur*-hut thus denotes the simplest form of architecture. Unlike the Wild Man, the first architect is at odds with nature, indicative of a practice based on the extraction of building materials and tools. As an intellectual, speculative construct, the *ur*-hut is an important theme in architectural theory that reflects ways of creating and manipulating an enclosed environment. Inherent in architecture's origin stories is a differentiation between the less comfortable outside climate and the more comfortable interior climate designed for the sustenance of the human body.

6.5 Conclusion: The Dangers and Promises of Privacy

I have explored instances of a solitary male engaged in the heuristic endeavour of extracting divine revelation, ore deposits, or suitable building materials under hostile environmental conditions in a wasteland. While the hermit sought the desert, the miner produced it, and the architect managed it. The examples I have given appear, at first glance, to be defined by diametrically opposed binaries – solitude versus company, nature versus culture, ignorance versus knowledge. The motivated, solitary male in the untamed, raw, extreme environment of the figurative or literal desert seeks to transform it or himself in juxtaposition to the found conditions. Here, privacy is a prerequisite for extractive practices based on

77 Agricola, *De Re Metallica*, 214.
78 Filarete, MS Magliabechiano, Biblioteca Nazionale Florence, Magl. II, 1, 140, fol. 5r.
79 Filarete, MS Magliabechiano, Biblioteca Nazionale Florence, Magl. II, 1, 140, fol. 5r.

dismantling, dissecting, and reorganisation of raw matter into culture and knowledge. The intellectual construct of an *ur*-hut historically mediates the threshold between the environment as it is – the wild – and a stable and comfortable interior microclimate – the tamed or cultured. To overcome this overly simple binary juxtaposition, I have transplanted the *ur*-hut out of the imaginary, primordial landscape and into the industrial context of the mine, which engenders a man-made, unstable, and hostile environment of 'progress.'

The hut forms a threshold between the human body and the desert – it is an infrastructure of environmental manipulation. It makes the stay in the desert or in the mine possible. The simple shelter or hut mediates between the wilderness and its hostile environmental conditions, such as the scorching sun of the desert and its cold nights. The hermit advances deeper into habitable regions, and the miner digs deeper below ground via the tool of architecture – an architecture as rudimentary as possible while still facilitating survival. The simple hut frames the body in the expanse of the conceptual desert and alleviates the potentially overwhelming privacy by allowing space for just one body – like the narrow shafts of the mine that are designed for access by a single person. The miner and hermit or scholar struck a balance between solitude and collective and between nature and culture to optimise their resource extraction and wealth or knowledge creation. The one-man hut facilitated privacy to take on more positive connotations, as the hut (or shaft) were identified with important knowledge creation. It found practical application in early modern room typologies such as the study and the closet.

The figure of the miner is an interesting key to unlocking the nuances of privacy in the early modern period, especially as he is generally understood as part of a collective industry that involves many people, shared customs, and collaborative tasks (Figure 9). However, as this figure also shows, below the ground, the miners are slotted into lithic niches where they experience moments or periods alone, at labour within the mountain, tracing ore veins, unearthing material to make space for their own bodies and their advances deeper into the rock.

To conclude, the investigation of early modern mining in Saxony reveals several markers of privacy. While the miners are connected by their profession and shared labour and there is the potential of physical proximity even below ground, privacy is exclusive and enables people to create distance between themselves and others. The dense mass of rock, which swallows up light, sound, and vibrations between the hewers depicted in mining imagery, is representative of the undefinable differences between people that require and provide privacy – even between related members of a collective, such as the mining community. Privacy happens in the space that creates and accepts difference between people.

Privacy is intertwined with deprivation and requires motivation – the miners are motivated to endure their physical privations, to face their demons, and to incorporate themselves deeper into the mountain in exchange for more embodied knowledge of the mountain together with the potential riches and the change in social status (public life) these can entail. In an aspect of privacy linked to spatial agency, the hewers are literally carving out space for their own bodies from the mountain mass. They carve out the space into which they withdraw. Considering these findings on privacy, it may become obvious why a contemporary reading of privacy as given by cookie politics and GDPR may not lead to a satisfactory experience of privacy. Privacy requires labour in the sense of commitment, and its value is bound up with the development of the self.[80]

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